

Cal/Ecotox  
Exposure Factors for Burrowing Owl (Speotyto cunicularia)\*

Page 1

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Age at Fledging, Metamorphosis, Weaning	review				NR	NR	CANADA; MEXICO; USA	a	1
Age at Fledging, Metamorphosis, Weaning	review				NR	NR	CANADA; MEXICO; USA	b	1
Age at Sexual Maturity	review				NR	NR	CANADA; MEXICO; USA	c	1
Body Weight - Mean	156	3.6 (SE)		g	F	Adult	CO	d	2
Body Weight - Mean	150.6		129-185	g	F	Adult	Lab	e	3
Body Weight - Mean	146	1.9 (SE)		g	M	Adult	CO	f	2
Body Weight - Mean	158.6		120-228	g	M	Adult	Lab	g	3
Body Weight - Mean	168.0		125.6-210.0	g	F	NR	CA	h	4
Body Weight - Mean	172.0		145.0-191.3	g	M	NR	CA	i	4
Body Weight - Mean	review				NR	NR	CANADA; MEXICO; USA	j	1
Clutch or Litter Size	4.38		2-10	chicks/nesting territory	B	Adult	CO	k	2
Clutch or Litter Size			1.7-2.2	young/breeding adult	B	Adult	CA	l	4
Clutch or Litter Size	3.0			chicks/nest	B	Adult	Santa Clara; CA	m	5
Clutch or Litter Size	2.5			chicks/nest	B	Adult	Santa Clara; CA	n	5
Clutch or Litter Size			8-12	eggs/clutch	F	Adult	OR	o	6
Clutch or Litter Size	8.8	1.8 SE		eggs/clutch	F	Adult	NM	p	7
Clutch or Litter Size	78			young/study site	B	Juvenile	NM	q	8
Clutch or Litter Size	review				NR	NR	CANADA; MEXICO; USA	r	1
Dietary Composition	Dipodomys sp (8-18%), Perognathus sp (4-29%), insects (53-75%), crayfish (0-9%), reptiles (0-5%), birds (0-1%)				B	Adult	CA	s	9
Dietary Composition	vertebrates (14.3%), invertebrates (85.7%)				B	Adult	OR	t	10
Dietary Composition	vertebrate (86.7%), invertebrate (13.3%)				B	Adult	OR	u	11
Dietary Composition	vertebrate (89.9%), invertebrate (10.1%)				B	Adult	WA	v	11
Dietary Composition	mammals (4.7%), birds (50.4%), amphibians (1.3%), reptiles (12.8%), insects (30.8%)			%	NR	Adult	DOMINICAN REPUBLIC	w	12
Dietary Composition	mammals (50), insects (108), birds (1)				B	Both Adult and Juv.	OR	x	13
Dietary Composition	mammals (28), insects (22)				B	Both Adult and Juv.	OR	y	13
Dietary Composition	mammals (414), insects (259), birds (3), spiders (2)				B	Both Adult and Juv.	OR	z	13
Dietary Composition	mammals (85), insects (170), birds (3), spiders (0), reptiles (1)				B	Both Adult and Juv.	OR	aa	13
Dietary Composition	arthropods (92%), vertebrates (8%)				B	NR	OR	ab	14
Dietary Composition	mammals (31.4%), birds (5.9%), insects (28.6%), vegetation (61.0%)				B	NR	CA	ac	4
Dietary Composition	mammals (18.9%), birds (3.9%), insects (29.9%), vegetation (71.3%)				B	NR	CA	ad	4

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Dietary Composition	mammals (41.2%), birds (2.0%), insects (23.3%), vegetation (55.5%)				B	NR	CA	ae	4
Dietary Composition	mammals (35.7%), birds (1.3%), insects (27.7%), vegetation (57.4%)				B	NR	CA	af	4
Dietary Composition	review				NR	NR	CANADA; MEXICO; USA	ag	1
Duration of Incubation or Gestation	review				NR	NR	CANADA; MEXICO; USA	ah	1
Fledging or Weaning Rate	50-57%				B	Adult	OR	ai	14
Fledging or Weaning Rate	2.5			young/occu pied nest	B	Adult	WA	aj	15
Fledging or Weaning Rate			53.3-88.8	%	B	Adult	CA	ak	4
Fledging or Weaning Rate	1.91		1.63-2.19	fledglings/s	B	Adult	MEXICO	al	16
				uccessful nest					
Fledging or Weaning Rate	4.9			fledglings/p air	B	Fledgling	NM	am	8
Fledging or Weaning Rate	1.9	1.9 SE		fledglings/n est	NR	Juvenile	NM	an	7
Fledging or Weaning Rate	1.5	1.5 SE	0-4	fledglings/n est	NR	Juvenile	NM	ao	7
Hatching Success	61		55-65	%	B	Adult	MEXICO	ap	16
Hatching Success			40-54	%	B	Adult	FL	aq	17
Hatching Success	78			%	B	Adult	Santa Clara; CA	ar	5
Hatching Success	73			%	B	Adult	Santa Clara; CA	as	5
Hatching Success			80-91	%	B	Hatchling	OR	at	6
Hatching Success	2.2	1.9 SE		eggs	NR	Juvenile	NM	au	7
				hatched/eg gs laid					
Hatching Success	3.5	2.9 SE		eggs	NR	Juvenile	NM	av	7
				hatched/eg gs laid					
Hatching Success	review				NR	NR	CANADA; MEXICO; USA	aw	1
Home Range	review				NR	NR	CANADA; MEXICO; USA	ax	1
Inhalation Rate	39.7	1.16 SE		per minute	NR	Adult	Lab	ay	18
Inhalation Rate	3.27	0.08 SE		ml BTPS	NR	Adult	Lab	az	18
Inhalation Rate	340			breaths/min	NR	Adult	Lab	ba	19
Inhalation Rate	25			breaths/min	NR	Adult	Lab	bb	19
Metabolic Rate	4.28	0.12 SE		ml	NR	Adult	Lab	bc	18
				STPD/min					
Metabolic Rate	0.95	0.04		cubic cm	NR	Adult	Lab	bd	19
				O2/g/hr					
Population Density			3-4	birds/mi^2	B	Adult	CA	be	20
Population Density			12-13	birds/mi^2	B	Adult	CA	bf	20
Population Density	2			pairs/6669 ha	B	Adult	WA	bg	15
Population Density			0.12-0.15	pairs/km2	B	Adult	MEXICO	bh	16
Population Density	5.8	3.6 SE	0.2-30.0	owls/ha	NR	Adult	NE	bi	21
Population Density	7.8	2.3 (SD)		per 1,000 mi	B	Both Adult and Juv.	CA	bj	22

Endpoint Type	Endpoint Value	Error	Range	Units	Sex	Life Stage	Location	Note	Reference
Population Density	925			pairs/43,23 5 km^2	B	NR	CA	bk	23
Survival/ Mortality	19			%	B	Adult	CA	bl	4
Survival/ Mortality	70			%	B	Juvenile	CA	bm	4
Survival/ Mortality	18			%	B	Nestling	CA	bn	4
Survival/ Mortality	review				NR	NR	CANADA; MEXICO; USA	bo	1
Territory Size	1.98		0.1-4.0	ac	B	Adult	CA	bp	4
Time of Fledging or Metamorphosis	September				B	Adult	CA	bq	4
Time of Mating/ Laying	April				F	Adult	OR	br	6
Time of Mating/ Laying	third week of March (begin)				F	Adult	NM	bs	8
Time of Mating/ Laying	review				NR	NR	CANADA; MEXICO; USA	bt	1
Time of Migration or Dispersal	August (begin)				B	Both Adult and Juv.	NM	bu	8
Time of Migration or Dispersal	Sep, Jan				B	Juvenile	CA	bv	4
Time of Molt	Jul (begin)				B	Adult	CA	bw	4
Time of Molt	review				NR	NR	CANADA; MEXICO; USA	bx	1
Time of Nesting	April - June				B	Adult	CA	by	4

- Notes**
- a N=NR
  - b N=NR
  - c N=NR
  - d N=31 birds; Rocky Mountain Arsenal National Wildlife Area
  - e body weight; N=15; Data collected from museum specimens of *S. cunicularia hypugaea*.
  - f N=38 birds; Rocky Mountain Arsenal National Wildlife Area
  - g body weight; N=13; Data collected from museum specimens of *S. cunicularia hypugaea*.
  - h N=10 birds; Oakland Airport
  - i N=12 birds; Oakland Airport
  - j N=NR
  - k mean productivity; N=33 nests; Rocky Mountain Arsenal National Wildlife Area
  - l mean annual productivity; N=18 birds; spring; Oakland Airport
  - m mean number of chicks per nest; N=7 pairs; spring; Shoreline Park
  - n mean number of chicks per nest; N=11 pairs; spring; Moffett Air Force Base
  - o N=4 burrows; spring; Umatillo and Morrow counties
  - p mean clutch size in artificial burrows; N=8 clutches, 66 eggs; New Mexico State University
  - q total number of young observed on study site; N=15 pairs; May; Albuquerque
  - r N=NR
  - s frequency of occurrence in pellets; N=3 burrows; Coachella Valley
  - t percent of diet based on pellet analysis; N=150 pellets; April-July; Malheur county
  - u diet composition by percent biomass in pellets; N=pellets 5,559; Apr, May, Jun, Jul; Columbia Basin
  - v diet composition by percent biomass in pellets; N=769 pellets; Apr, May, Jun, Jul; Columbia Basin
  - w percent composition of diet by biomass; N=396 identified prey items; Condition=nesting; Sierra de Bahoruco
  - x number of prey items found in sample pellets; N=39 pellets; May; Crooked River National Grassland
  - y number of prey items found in sample pellets; N=20 pellets; Oct; Crooked River National Grassland
  - z number of prey items found in sample pellets; N=228 pellets; Feb, Mar, Apr; Crooked River National Grassland
  - aa number of prey items found in sample pellets; N=60 pellets; July; Crooked River National Grassland
  - ab percent occurrence in diet based on pellet analysis; N=5,559 pellets; Gilliam, Morrow, and Umatilla counties
  - ac mean percent occurrence in pellets; N=608 pellets; Mar, Apr, May; Oakland Airport

ad	mean percent occurrence in pellets; N=209 pellets; Dec, Jan, Feb; Oakland Airport
ae	mean percent occurrence in pellets; N=366 pellets; Jun, Jul, Aug; Oakland Airport
af	mean percent occurrence in pellets; N=929 pellets; Sep, Oct, Nov; Oakland Airport
ag	N=NR
ah	N=NR
ai	percent of occupied nests that fledged young; N=63-76 nests; Gilliam, Morrow, and Umatilla counties
aj	N=NR; Columbia River
ak	proportion of nesting pairs that successfully fledged young (over two years); N=18 birds; spring; Oakland Airport
al	N=52 nests; spring; Mapimf Biosphere Reserve, Durango (1,000-1,350 m)
am	N=15 pairs; May; Albuquerque
an	mean fledging rate in natural burrows; N=59 nests; New Mexico State University
ao	mean fledging rate in artificial burrows; N=8 clutches, 66 eggs; New Mexico State University
ap	proportion of pairs that successfully raised at least one young; N=52 nests; spring; Mapimf Biosphere Reserve, Durango (1,000-1,350 m)
aq	reproductive success rate among pairs; N=NR; spring; Dade and Broward counties
ar	percent of pairs hatching at least one chick; N=9 pairs; spring; Shoreline Park
as	percent of pairs hatching at least one chick; N=15 pairs; spring; Moffett Air Force Base
at	based on number of young observed at burrow; N=4 burrows; spring; Umatillo and Morrow counties
au	mean hatching success in natural burrows; N=59 nests; New Mexico State University
av	mean hatching success in artificial burrows; N=8 clutches, 66 eggs; New Mexico State University
aw	N=NR
ax	N=NR
ay	average resting inhalation rate; N=60
az	average resting tidal volume; N=60
ba	breathing rate with heat loading (gular flutter onset); N=NR; See paper, Figure 5, for breathing rate versus ambient temperature.
bb	average breathing rate at ambient temperatures below body temperature; N=NR; See paper, Figure 5, for breathing rate versus ambient temperature.
bc	average resting oxygen consumption; N=60
bd	oxygen consumption in zone of thermoneutrality (at 30.1 degrees, Celsius); N=16; Measures taken at ambient temperatures from 2.1 to 44.1 degrees, Celsius (see paper, Table 1, for data).
be	fall/winter season density based on roadside censuses; N=NR; fall and winter; Imperial Valley
bf	breeding season density based on roadside censuses; N=NR; spring; Imperial Valley
bg	N=NR; Columbia River
bh	nesting density based on nearest-neighbor test; N=23-29 pairs; spring; Mapimf Biosphere Reserve, Durango (1,000-1,350 m)
bi	mean density in prairie dog towns of <35 ha; N=71 nests; spring, summer; west. NE; Densities were negatively related to prairie dog town size. See paper for other density data for other years and larger prairie dog town size.
bj	based on Christmas bird counts 1954-1986; N=NR; winter
bk	estimate of number of pairs in census area; N=198 UTM blocks censused; San Francisco Bay and Central Valley areas
bl	N=18 birds; Sep-Apr; Oakland Airport
bm	N=40 birds; Sep-Apr; Oakland Airport
bn	N=40 birds; Oakland Airport
bo	N=NR
bp	N=6 pairs; Oakland Airport
bq	period by which fledging is complete; N=18 birds; spring; Oakland Airport
br	N=4 burrows; spring; Umatillo and Morrow counties
bs	N=15 pairs; Albuquerque
bt	N=NR
bu	N=15 pairs; Albuquerque
bv	N=NR; Oakland Airport; two waves of dispersal were observed
bw	N=NR; Oakland Airport
bx	N=NR
by	N=18 birds; spring; Oakland Airport

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